The Emerging LiDAR Landscape

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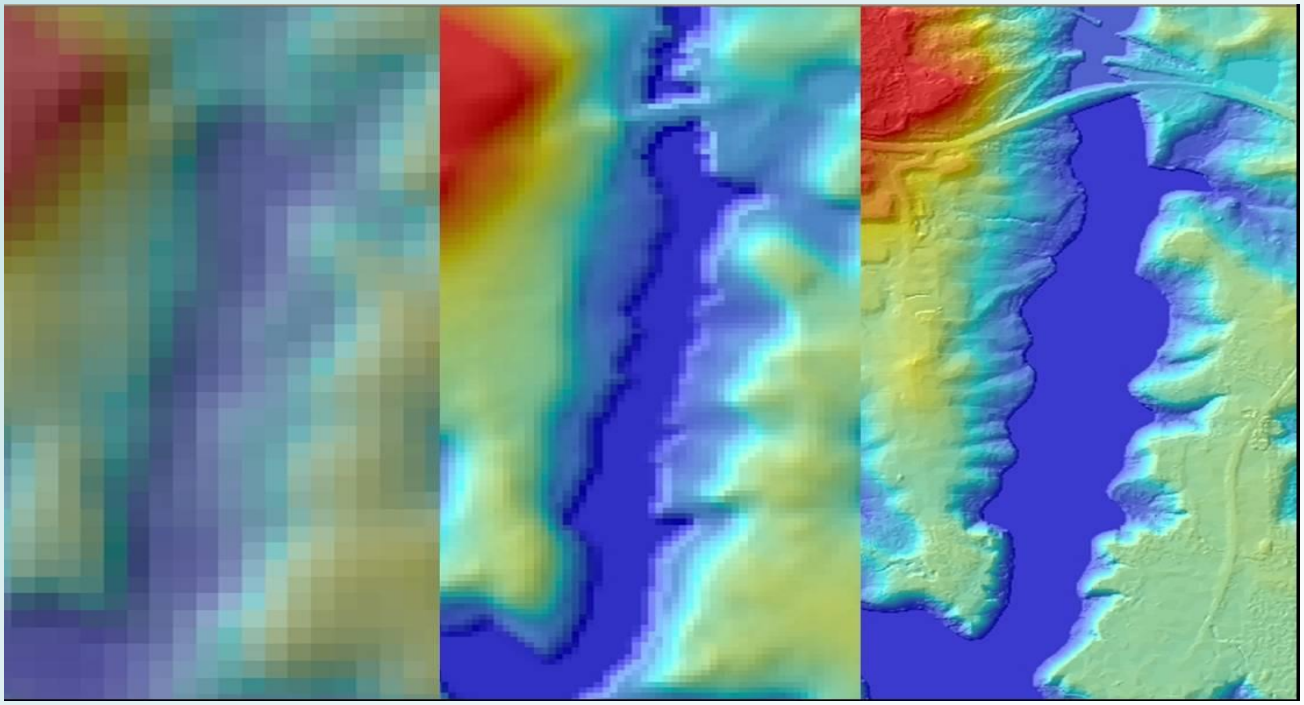
NH Geological Survey

NRCS State Technical Committee Meeting

March 10, 2015

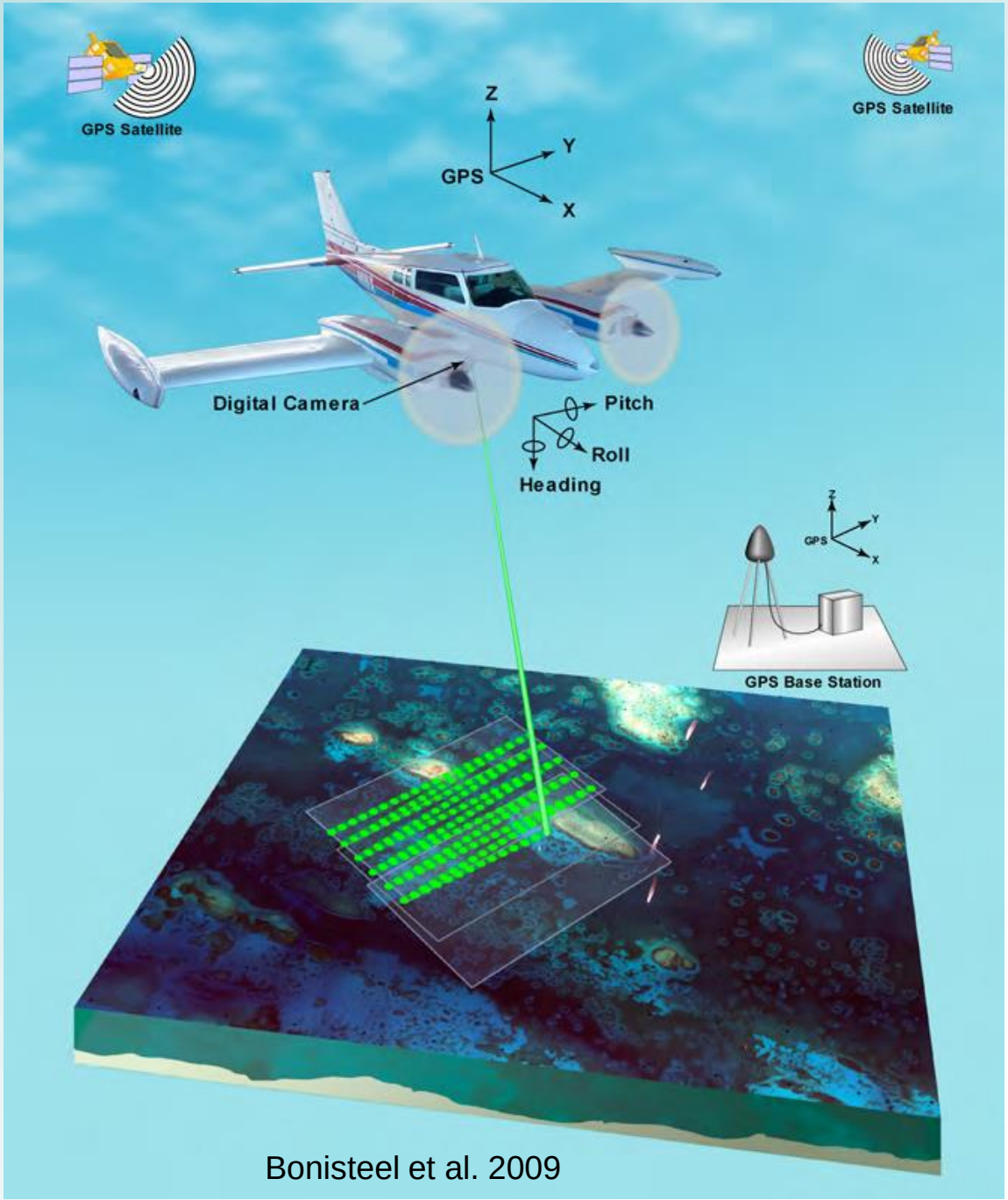
The Emerging LiDAR Landscape

Comparison of terrain models for Fresh Creek, Strafford County, NH: NED 30-meter and 10-meter DEMs versus 1-meter LiDAR

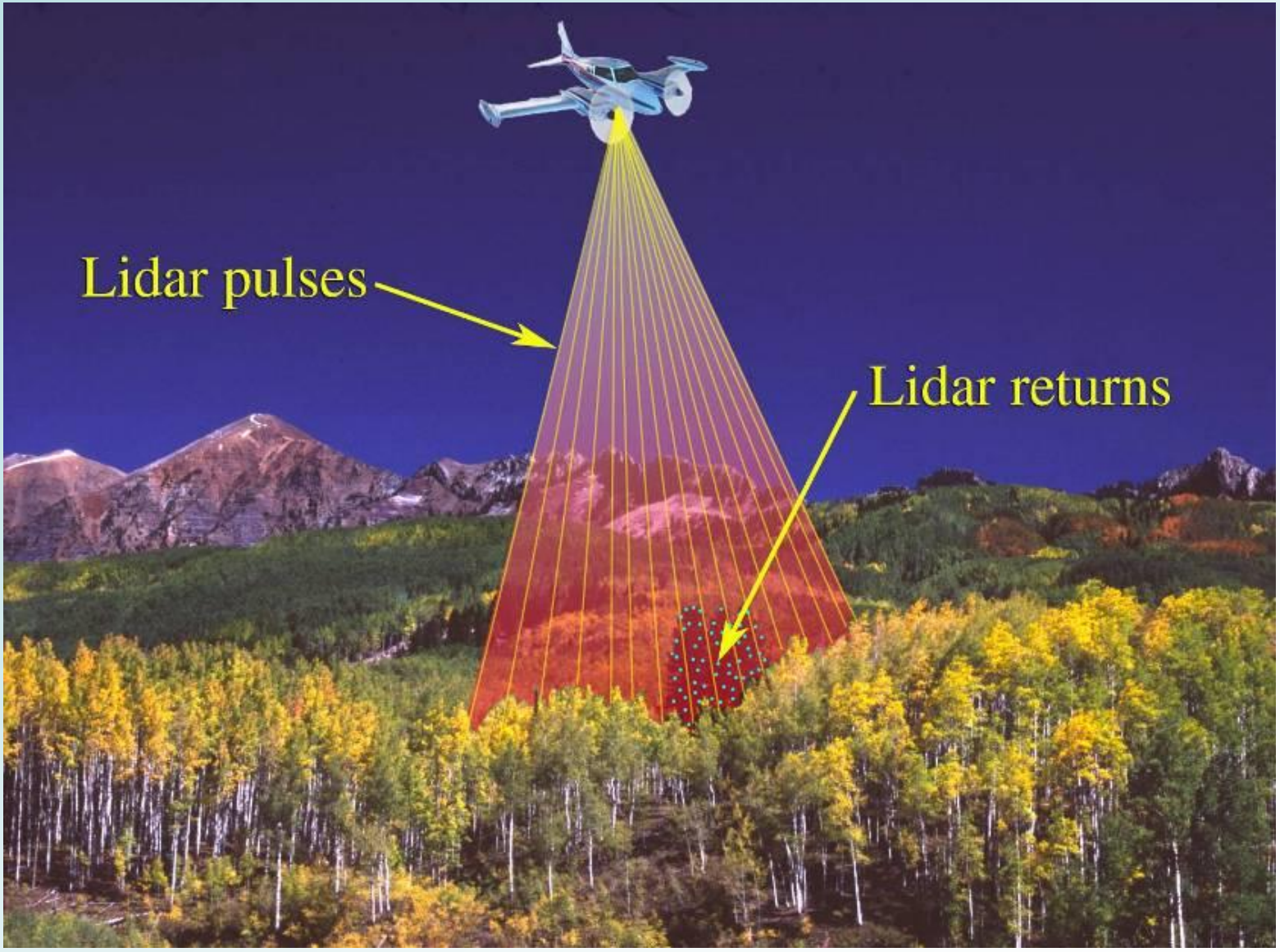


30-meter DEM	10-meter DEM	1-meter DEM

Data acquisition by airborne Light Detection and Ranging System (LiDAR)

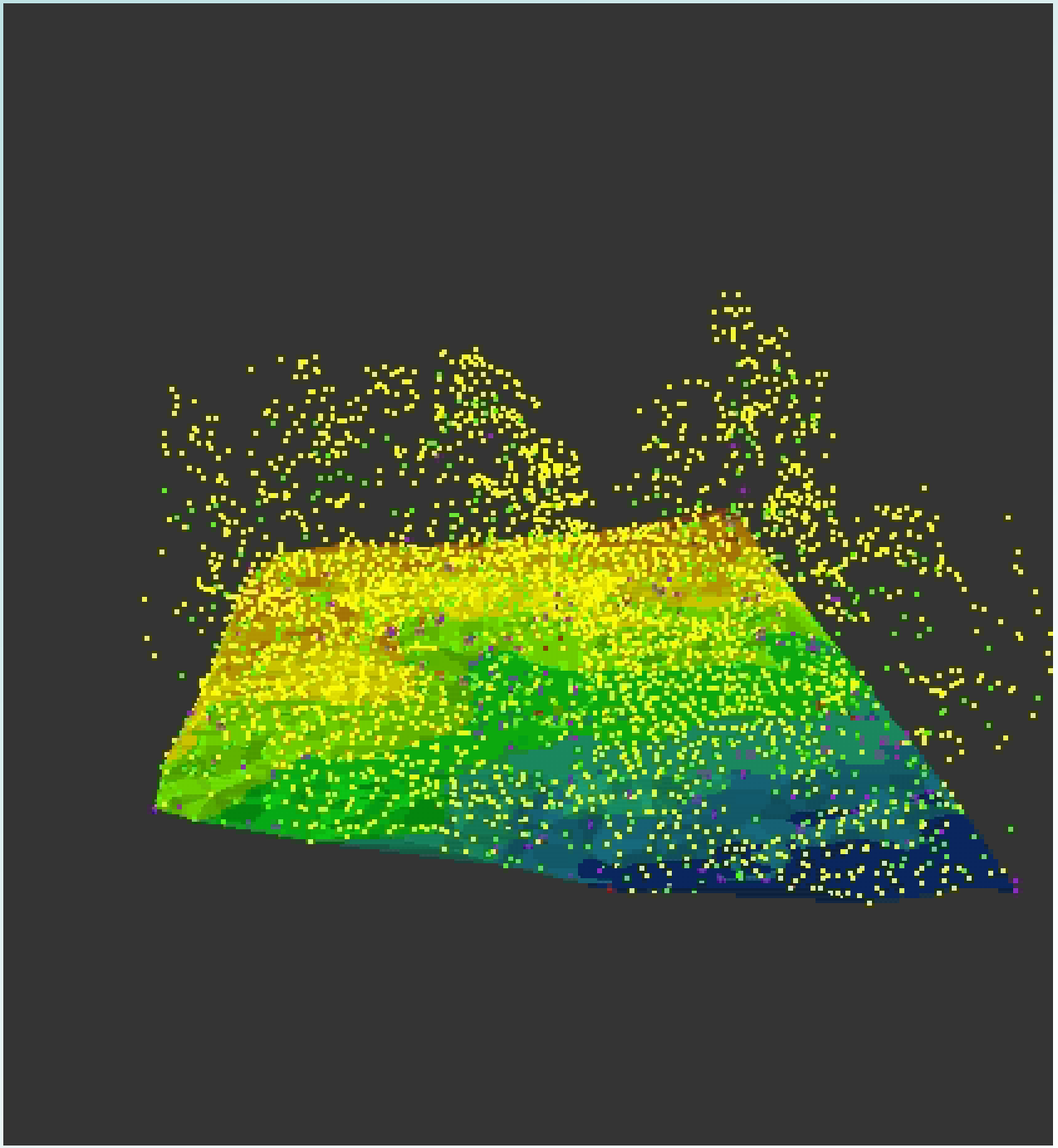


Bonisteel et al. 2009



Slide courtesy of the US Geological Survey

LiDAR “Point Cloud”



Laser returns classified by spatial structure (+/- intensity)

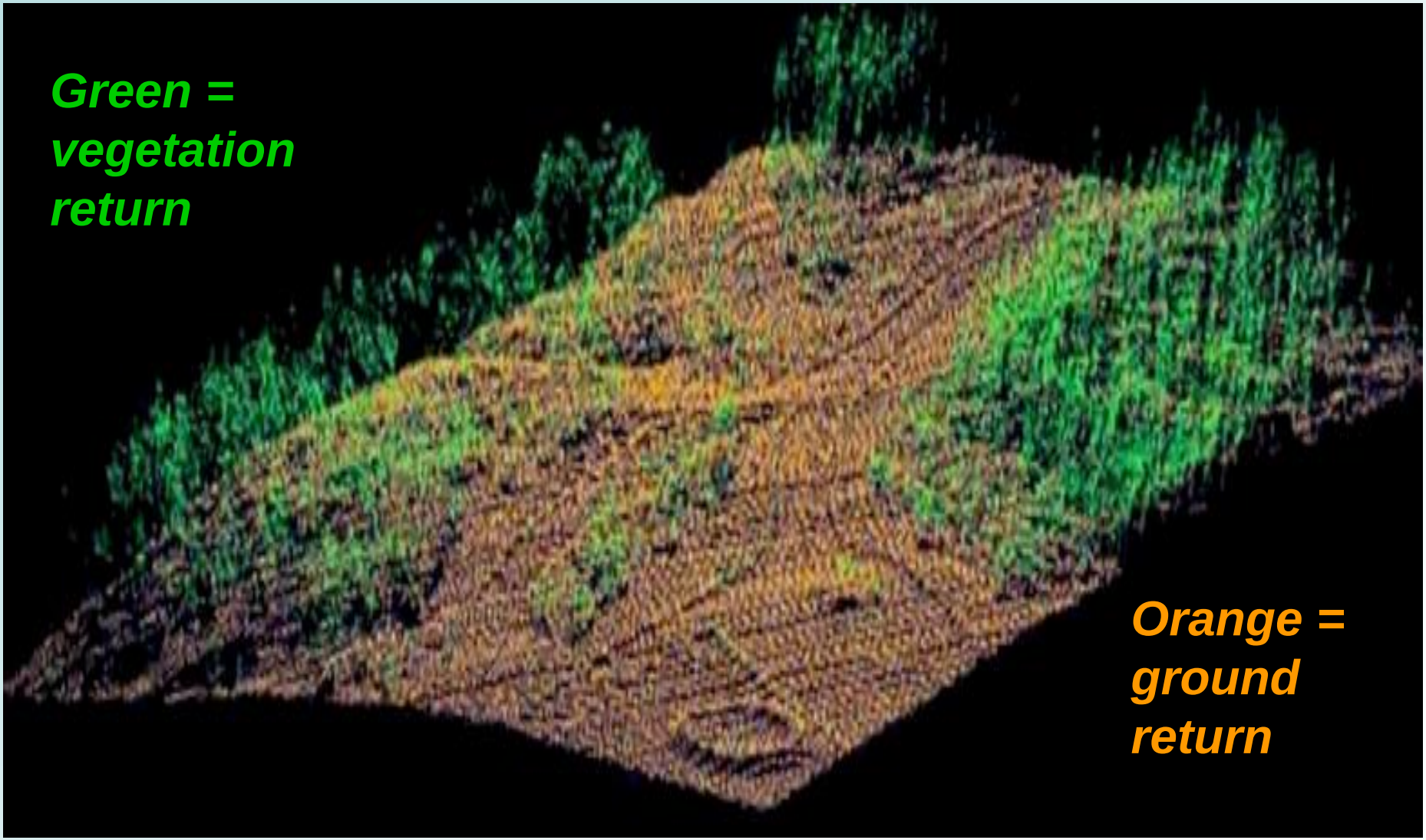


Image courtesy of the National Aeronautics and Space Administration

Bare earth and first return (forest canopy top) LiDAR surfaces

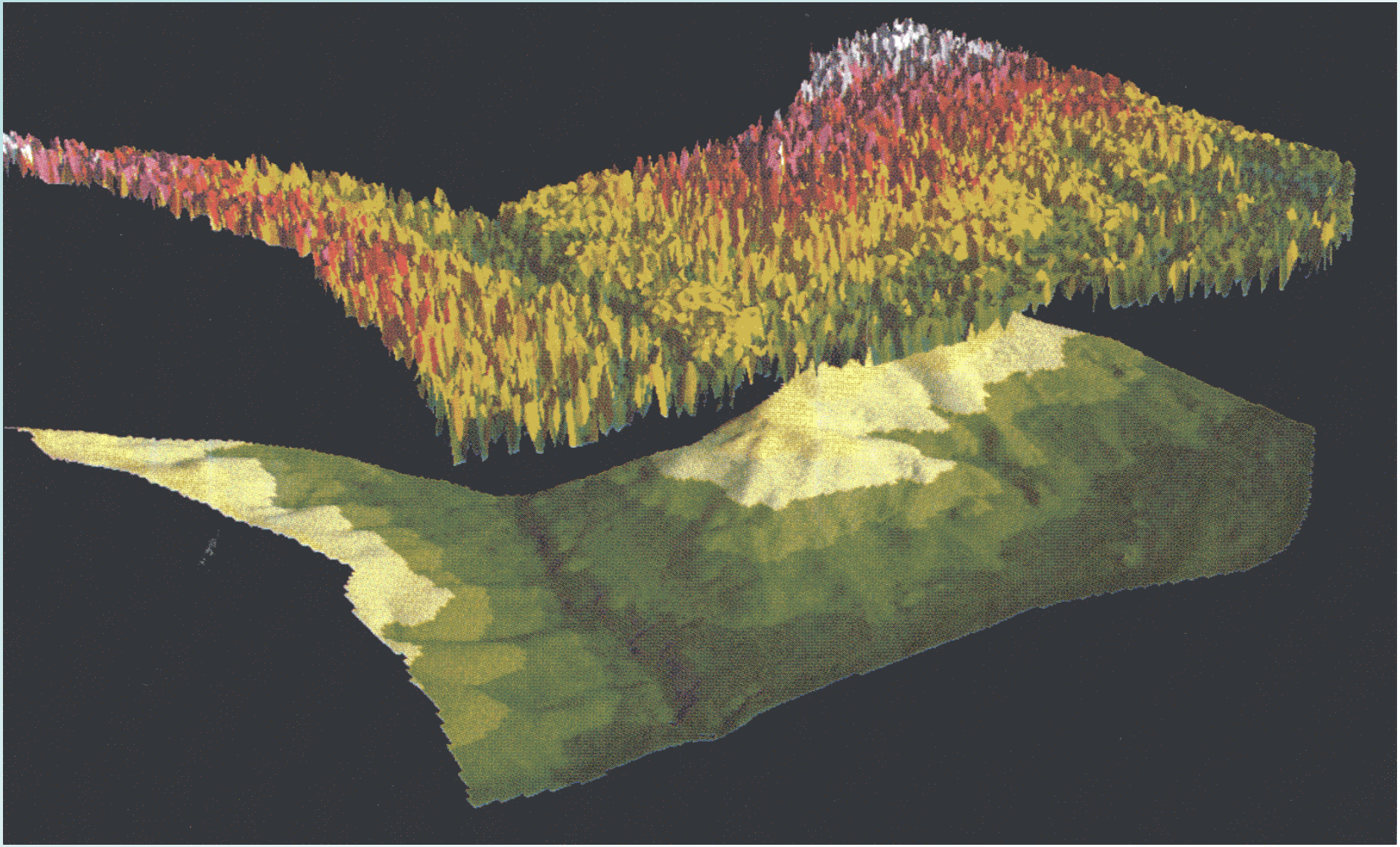
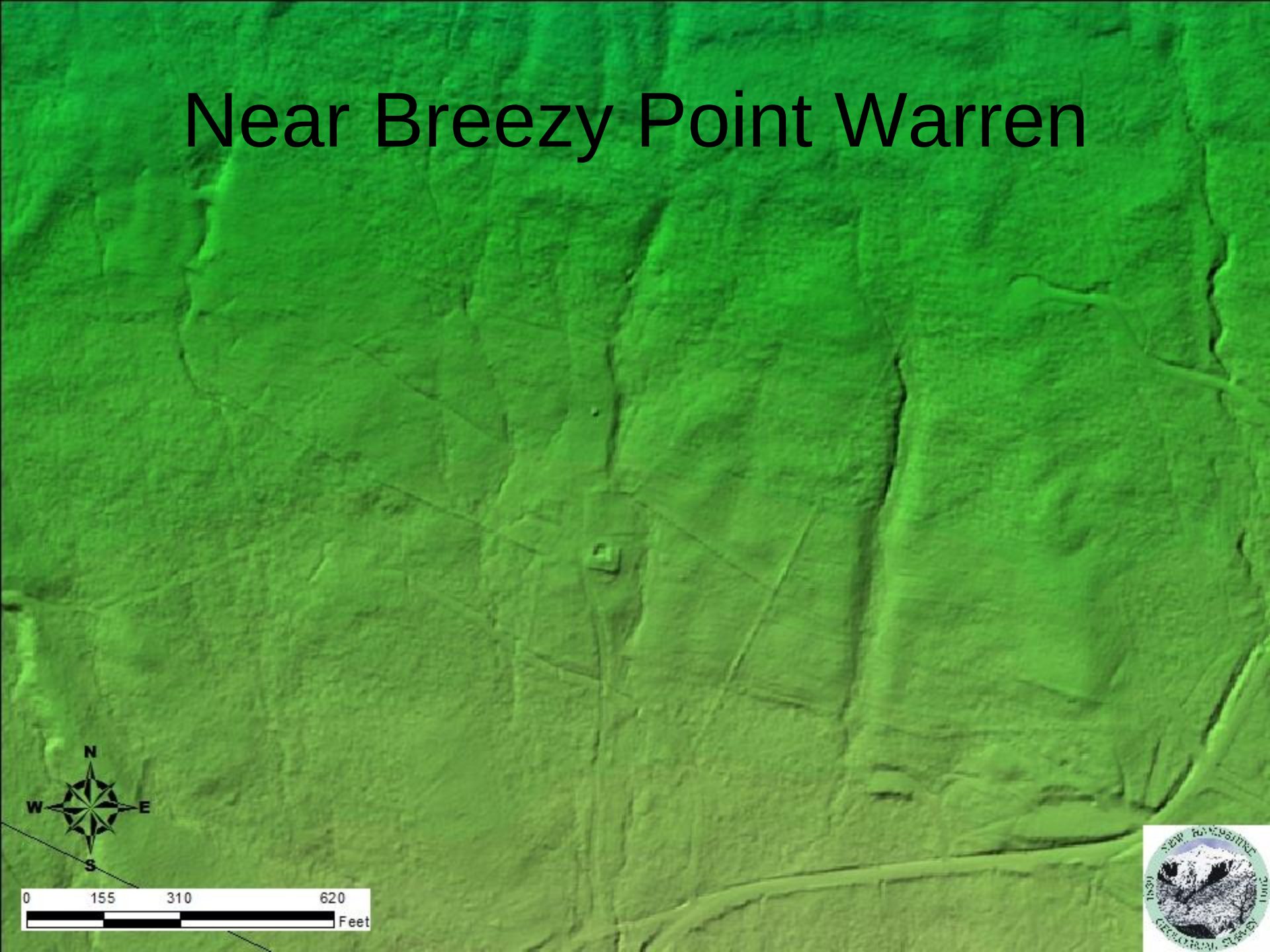
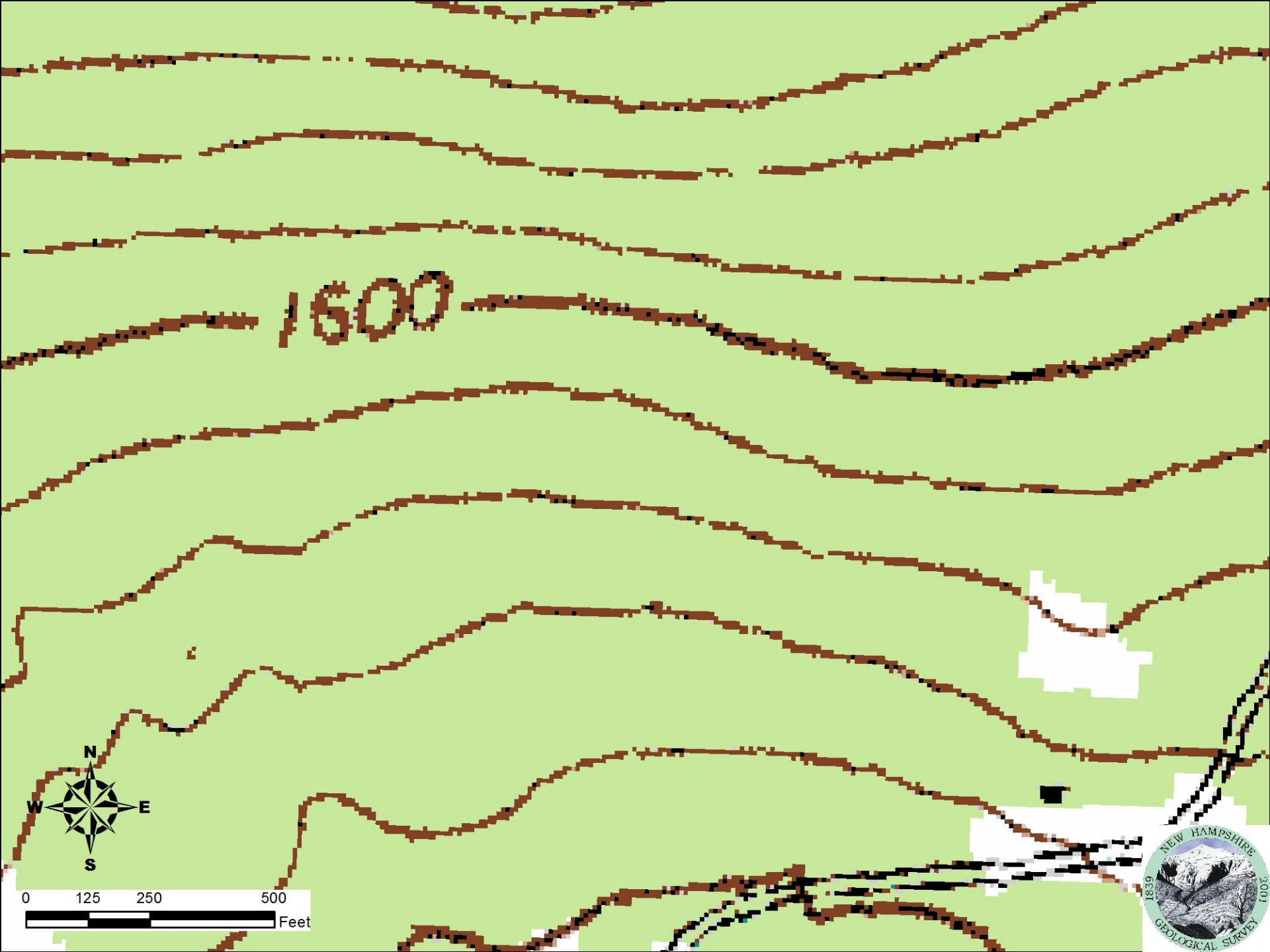


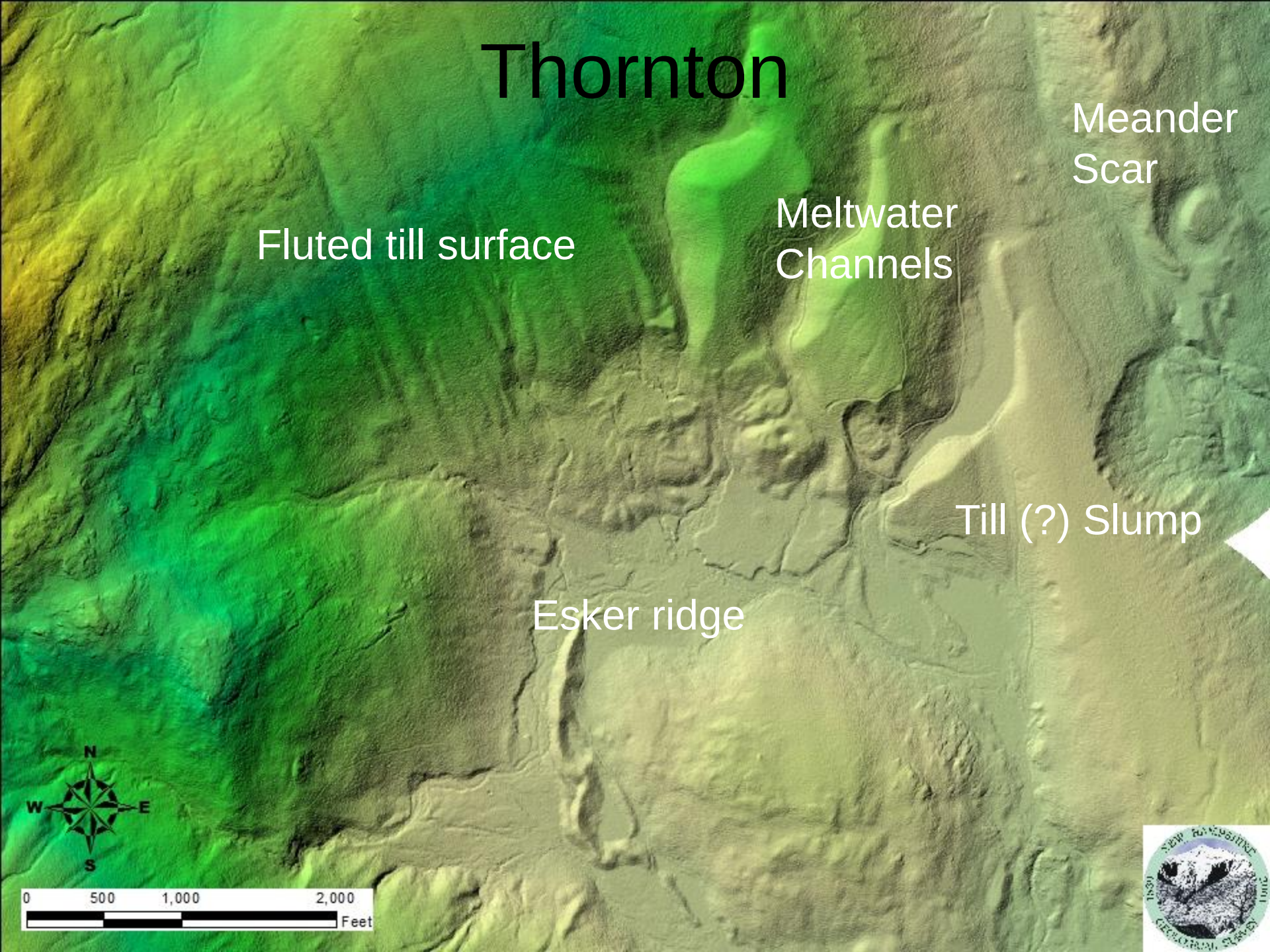
Figure from Maune, et al, 2001, *Digital Elevation Model Technologies and Applications: The DEM Users Manual*

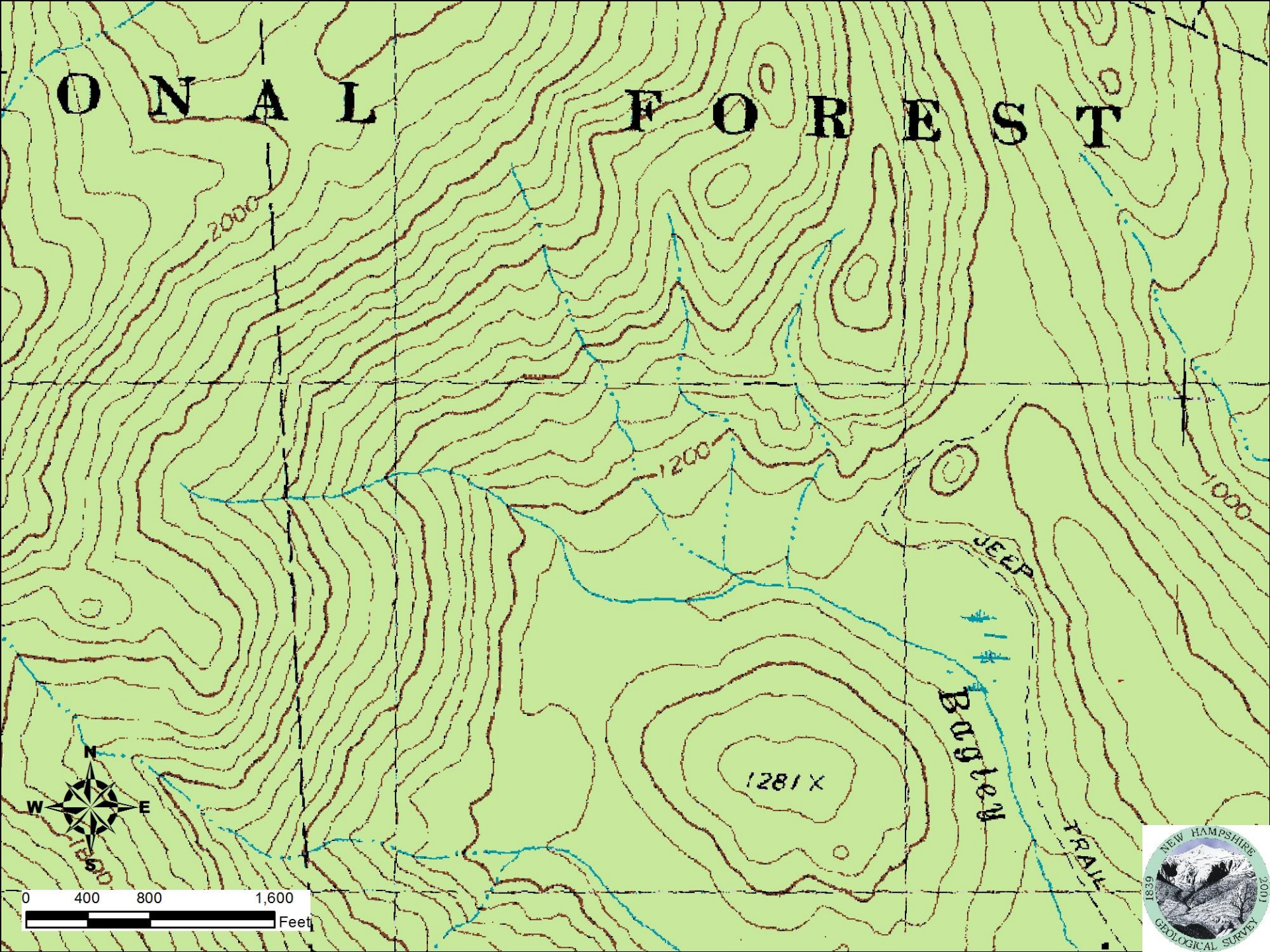
Near Breezy Point Warren




1600
N
W
E
S
0
125
250
500
Feet
NEW HAMPSHIRE
1839
2001
GEOLOGICAL SURVEY


N
W
E
S
0
155
310
620
Feet


Thornton
Meander Scar
Meltwater Channels
Fluted till surface
Till (?) Slump
Esker ridge
N
W
E
S
0
500
1,000
2,000
Feet


ONAL FOREST
2000
1200
1000
JEEP
Bagley
TRAIL
1281 X
1500
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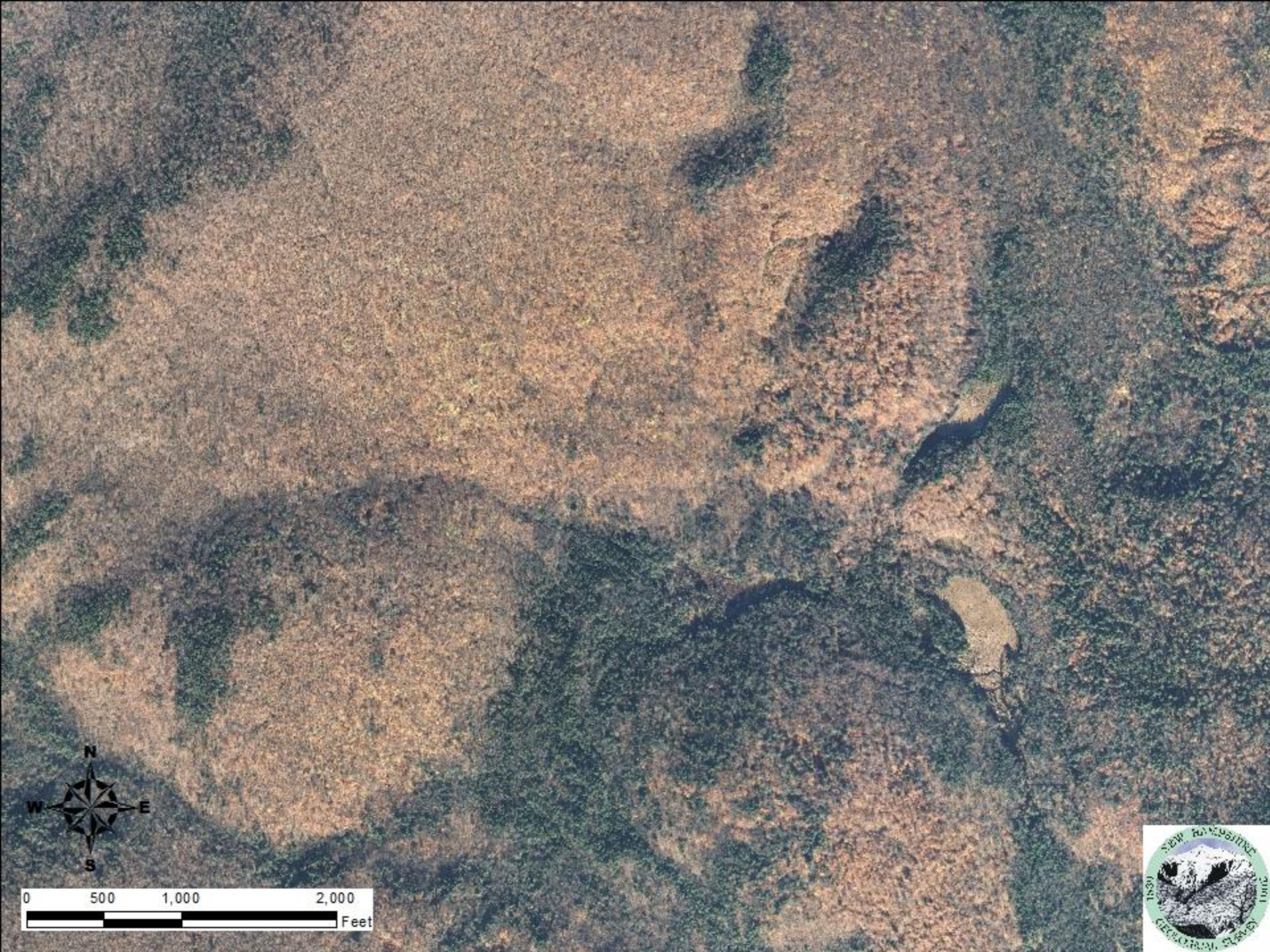
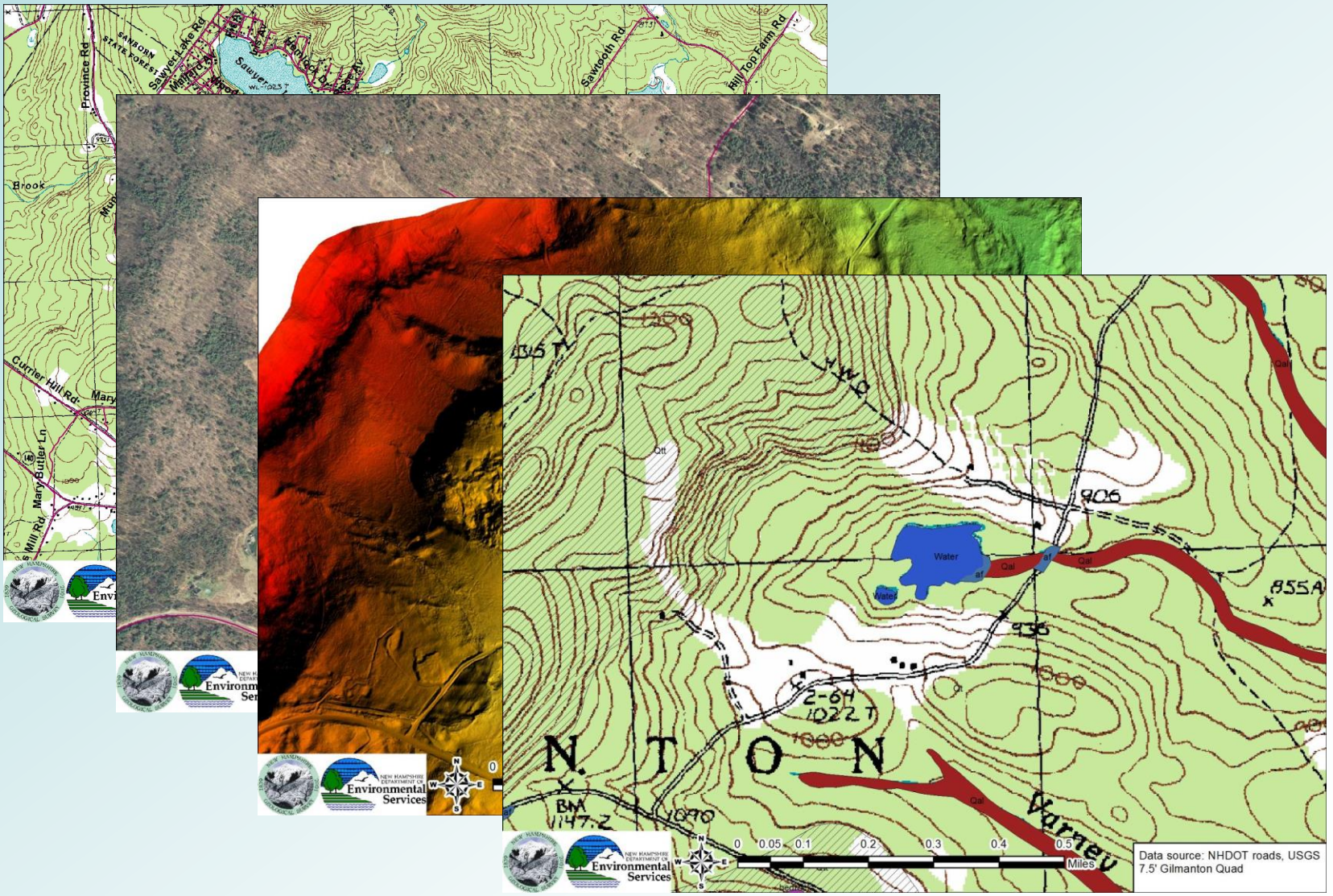
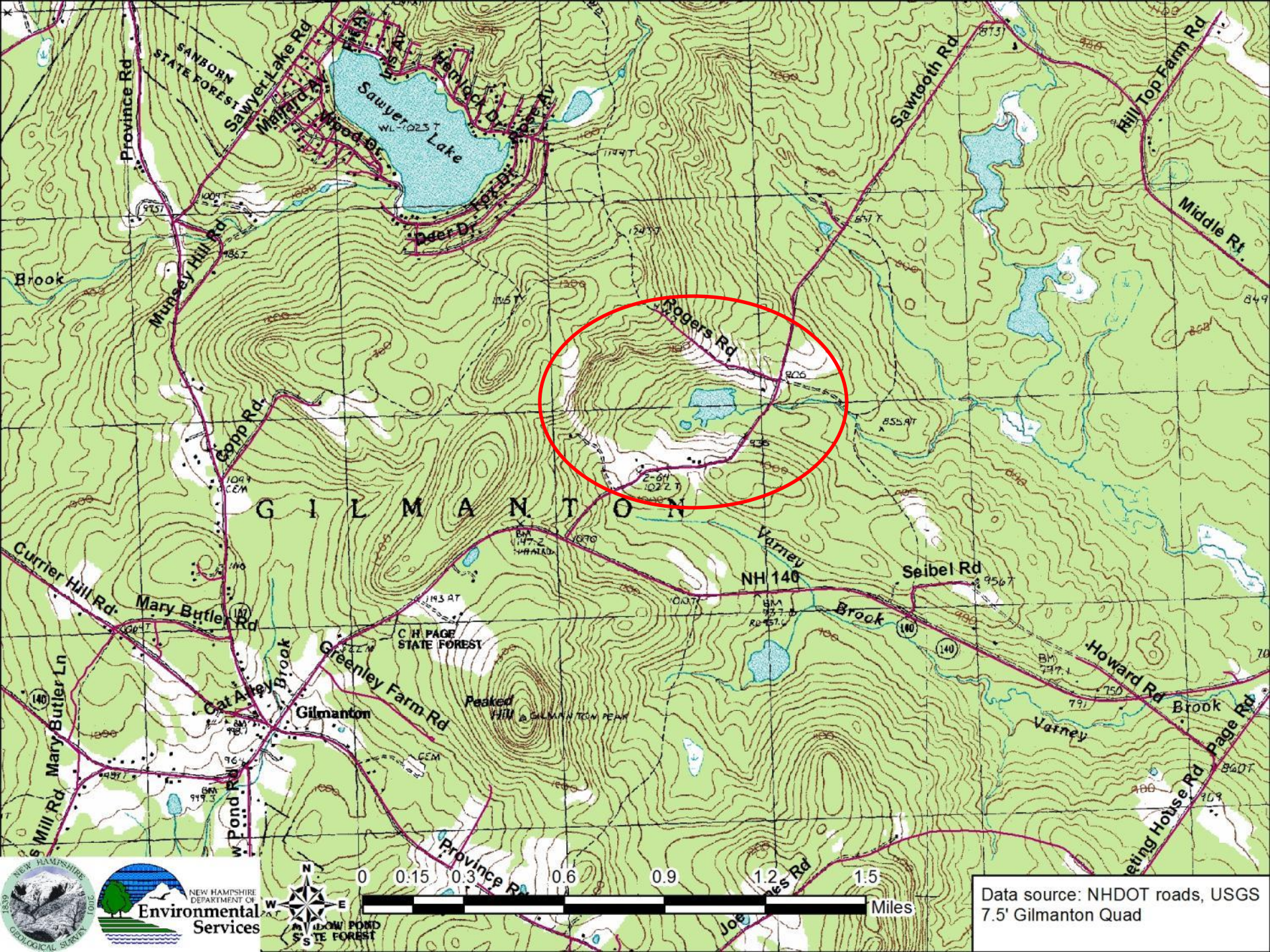
400
800
1,600
Feet
NEW HAMPSHIRE
1839
2001
GEOLOGICAL SURVEY


N
W
E
S
0
500
1,000
2,000
Feet

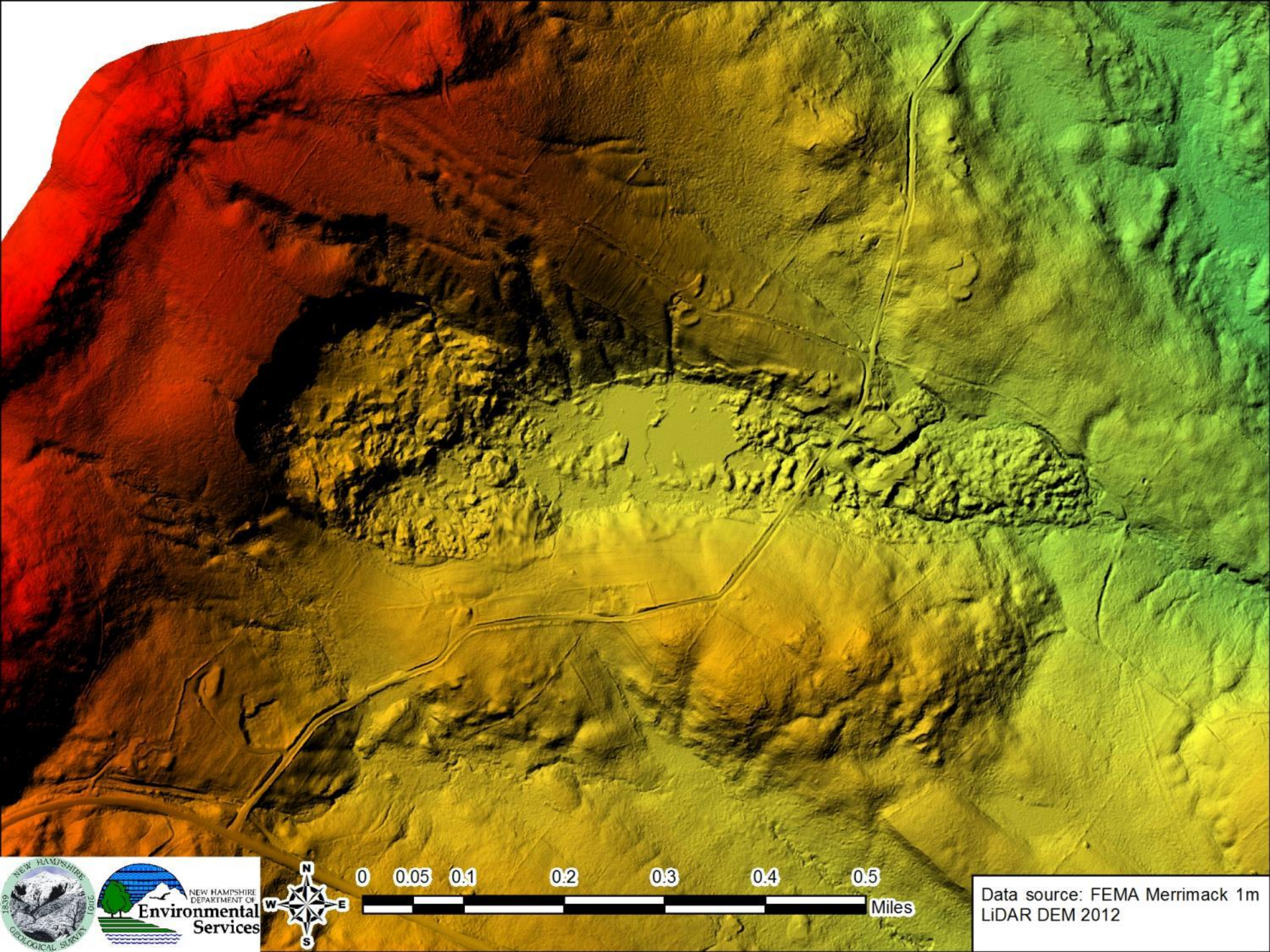
Application: Hazard Mapping





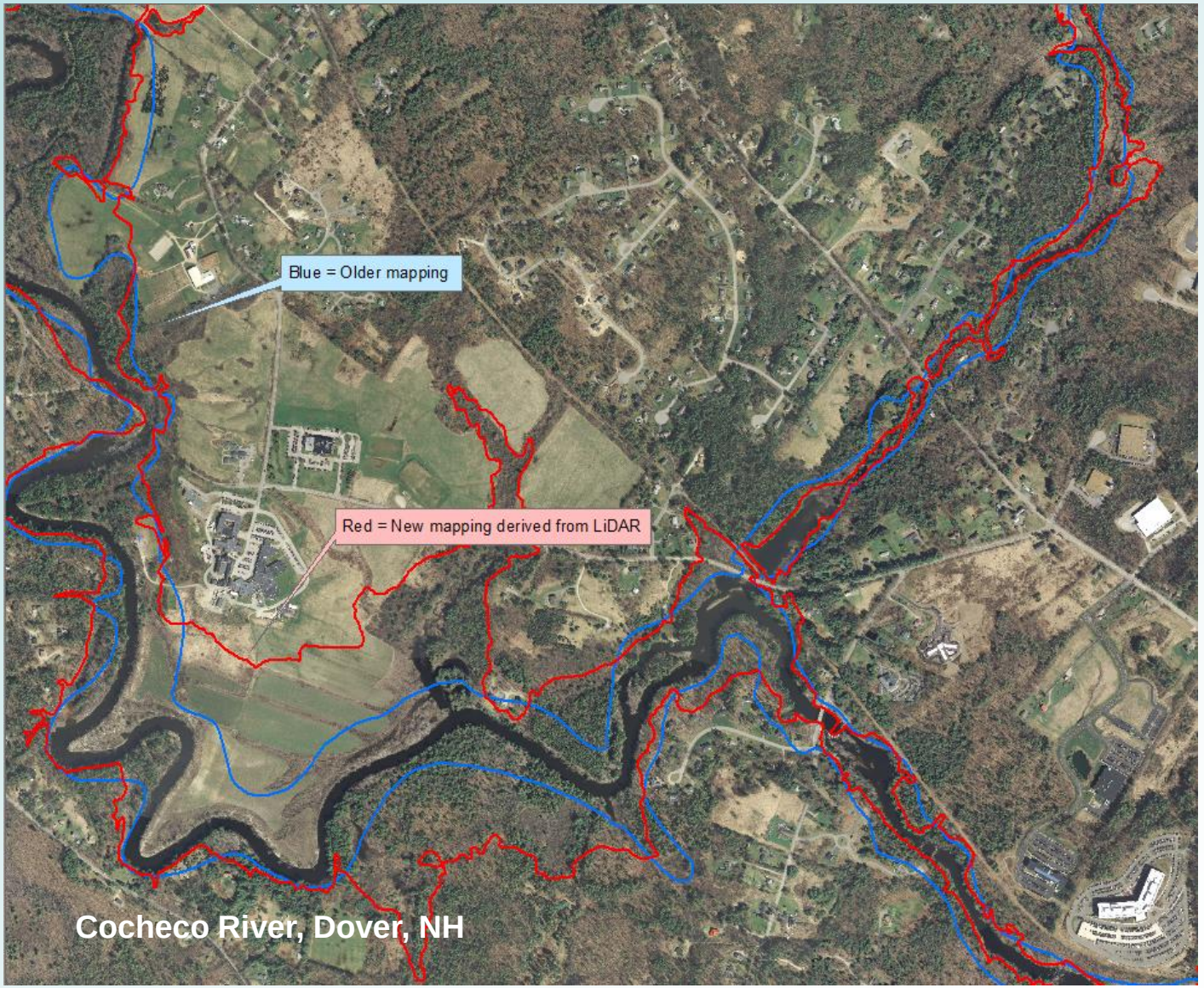
Data source: NHDOT roads, USGS 7.5' Gilmanton Quad


Rogers Rd
Sawtooth Rd
NH 140
N
W
E
S
0
0.05
0.1
0.2
0.3
0.4
0.5
Miles
NEW HAMPSHIRE GEOLOGICAL SURVEY 1839 2001
NEW HAMPSHIRE DEPARTMENT OF Environmental Services
Data source: NHDOT 1 foot orthophotos, GRANIT web service


NEW HAMPSHIRE
1839
GEOLOGICAL SURVEY
2001
NEW HAMPSHIRE
DEPARTMENT OF
Environmental
Services
N
W
E
S
0
0.05
0.1
0.2
0.3
0.4
0.5
Miles
Data source: FEMA Merrimack 1m
LiDAR DEM 2012

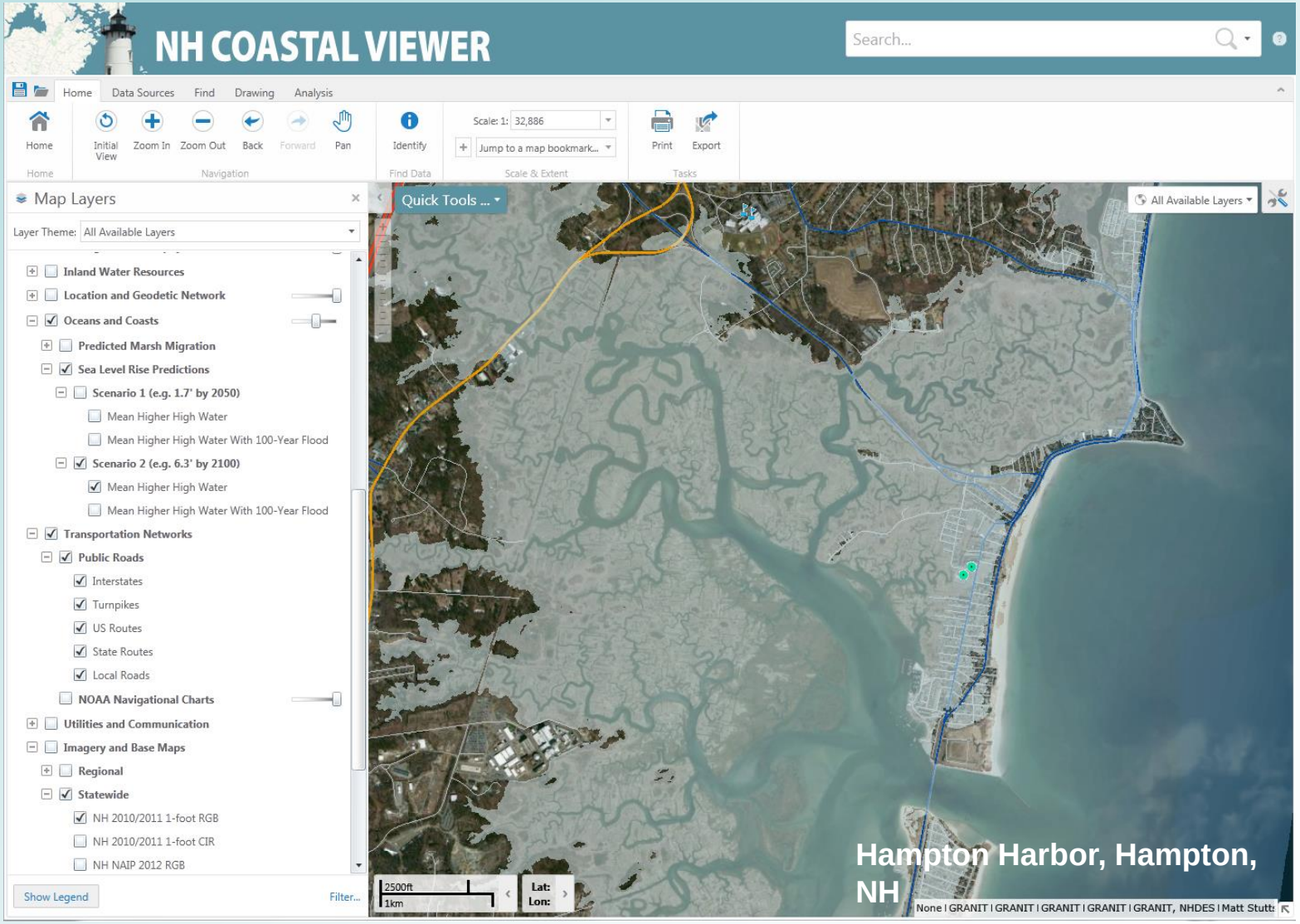
Application: Floodplain Mapping

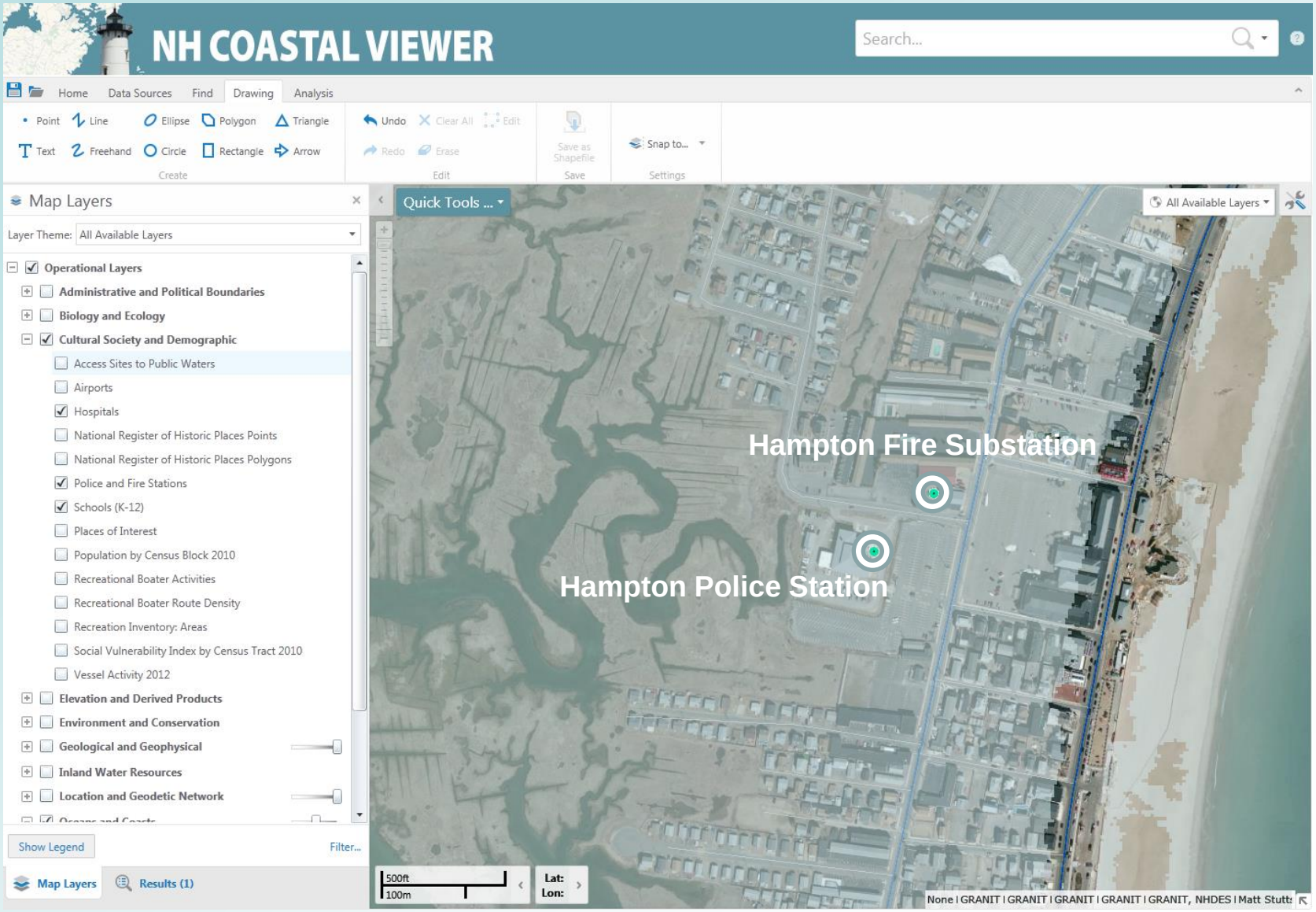
Improved Mapping with LiDAR-derived Topography



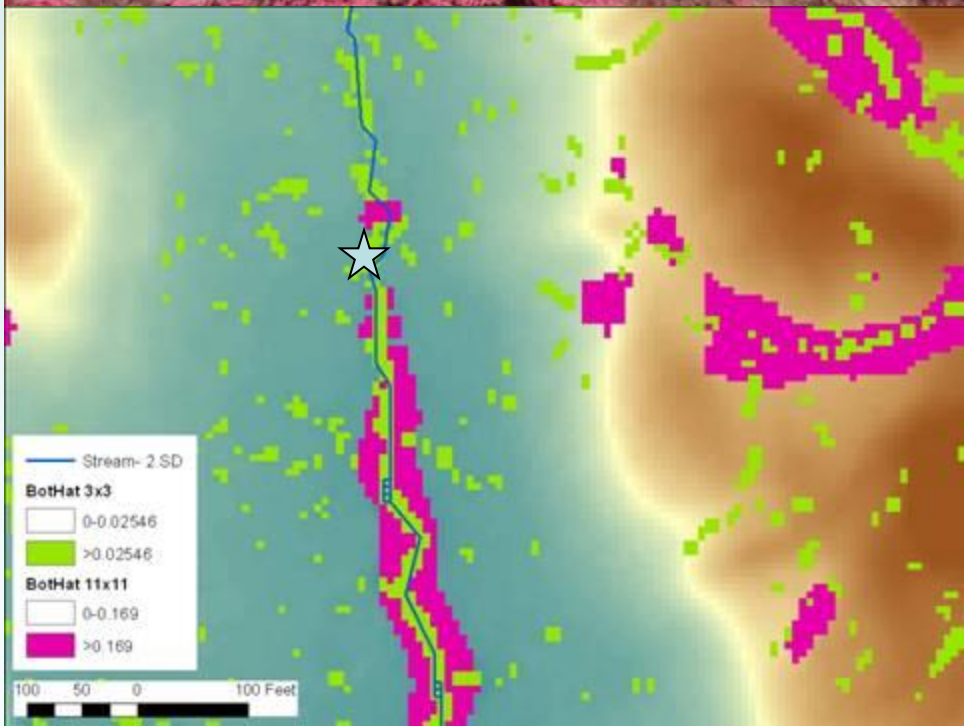
Application: Coastal Change

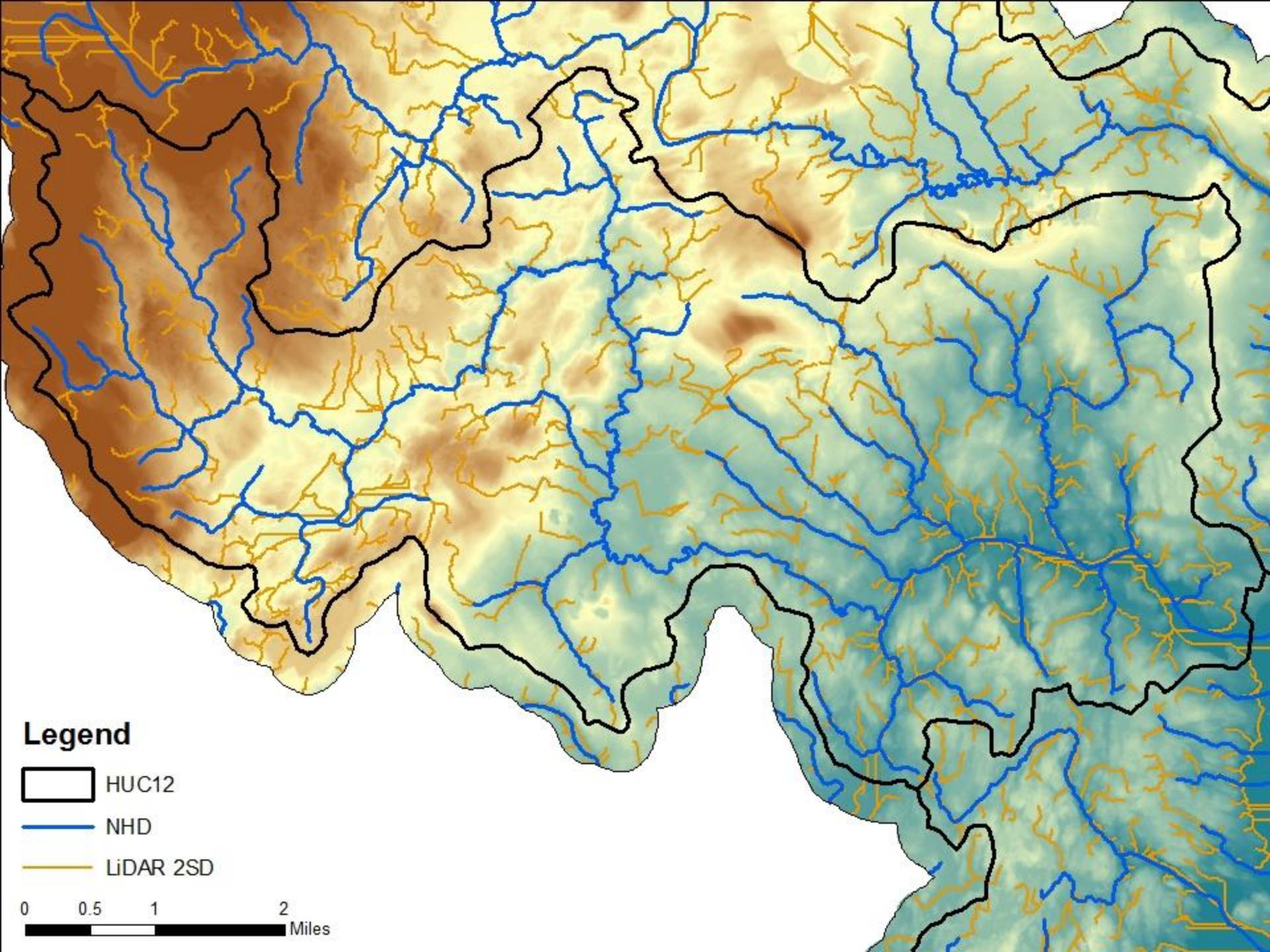
Predicted Inundation Area - 2100 Sea Level Rise Estimate of 6.3’



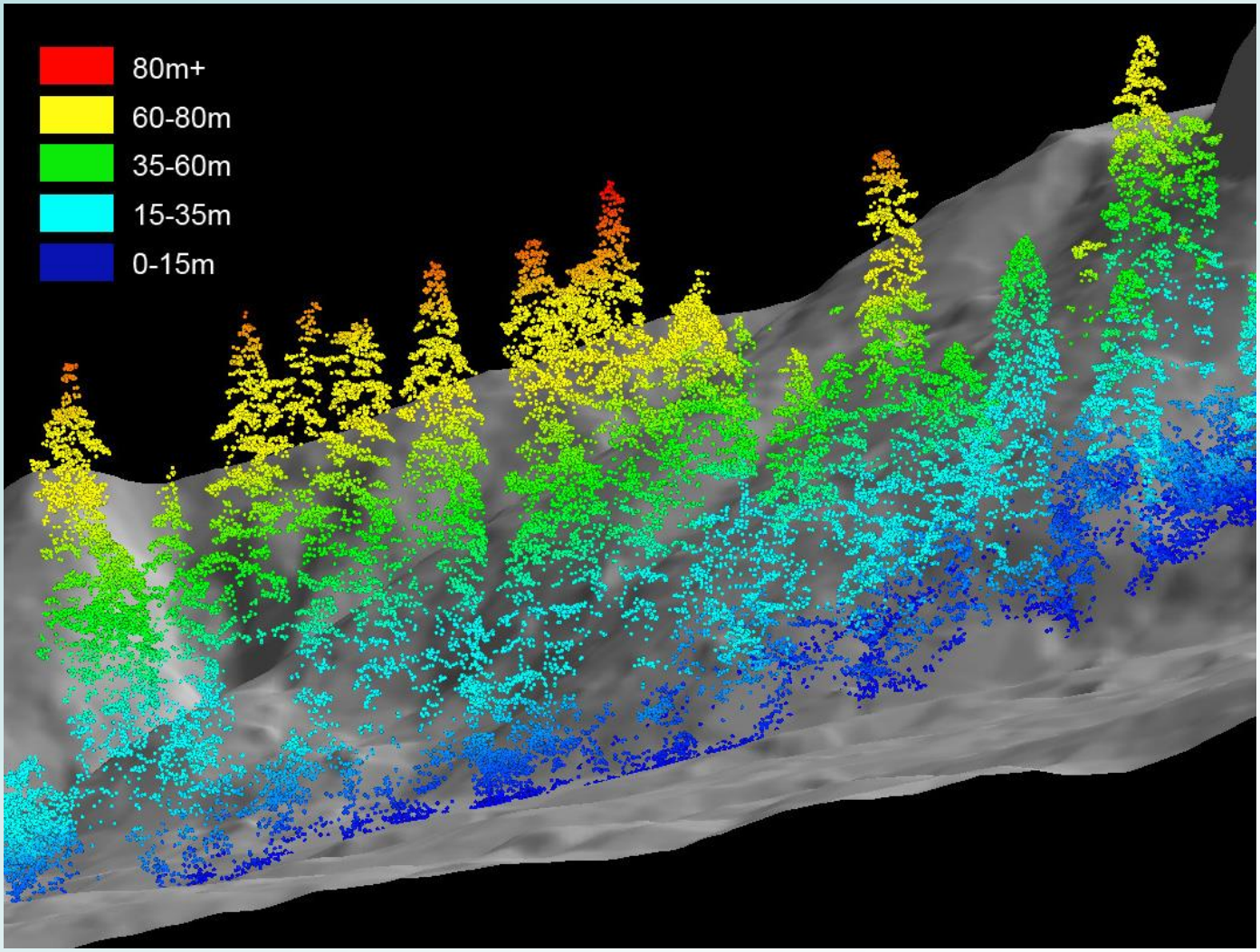

NH COASTAL VIEWER
Search...
Home
Data Sources
Find
Drawing
Analysis
Point
Line
Ellipse
Polygon
Triangle
Text
Freehand
Circle
Rectangle
Arrow
Create
Undo
Clear All
Edit
Redo
Erase
Edit
Save as Shapefile
Save
Snap to...
Settings
Map Layers
Layer Theme: All Available Layers
Operational Layers
Administrative and Political Boundaries
Biology and Ecology
Cultural Society and Demographic
Access Sites to Public Waters
Airports
Hospitals
National Register of Historic Places Points
National Register of Historic Places Polygons
Police and Fire Stations
Schools (K-12)
Places of Interest
Population by Census Block 2010
Recreational Boater Activities
Recreational Boater Route Density
Recreation Inventory: Areas
Social Vulnerability Index by Census Tract 2010
Vessel Activity 2012
Elevation and Derived Products
Environment and Conservation
Geological and Geophysical
Inland Water Resources
Location and Geodetic Network
Show Legend
Filter...
Map Layers
Results (1)
Quick Tools ...
All Available Layers
Hampton Fire Substation
Hampton Police Station
500ft
100m
Lat:
Lon:
None | GRANIT | GRANIT | GRANIT | GRANIT | GRANIT, NHDES | Matt Stutt

Application: Mapping of Headwater Streams



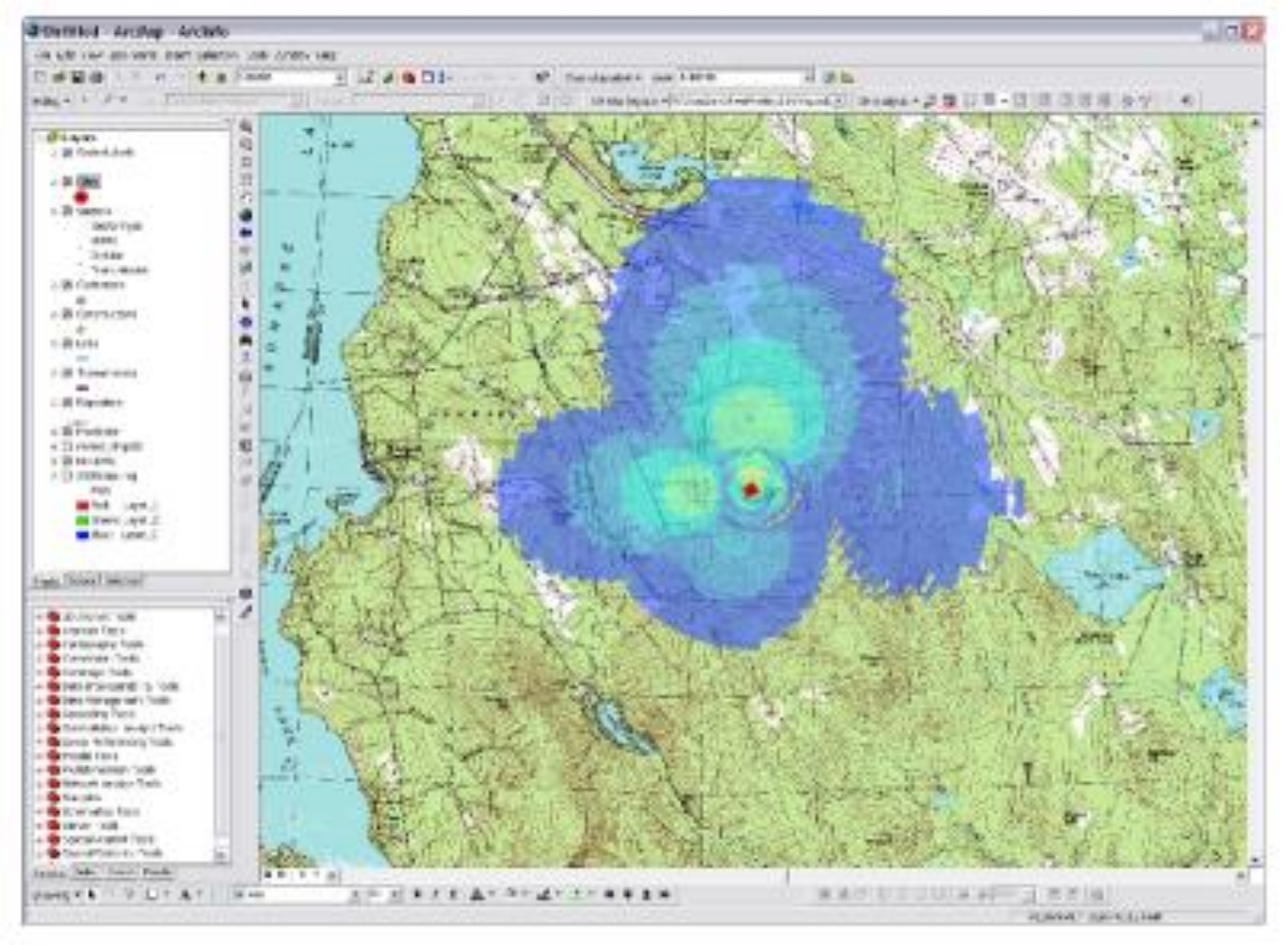

Legend
HUC12
NHD
LiDAR 2SD
0
0.5
1
2
Miles

Application: Forest Management



Source: Tom Spies and Keith Elsen, Oregon State University School of Forestry

Application: Broadband Planning



Source: NH Broadband Mapping & Planning Program, University of New Hampshire

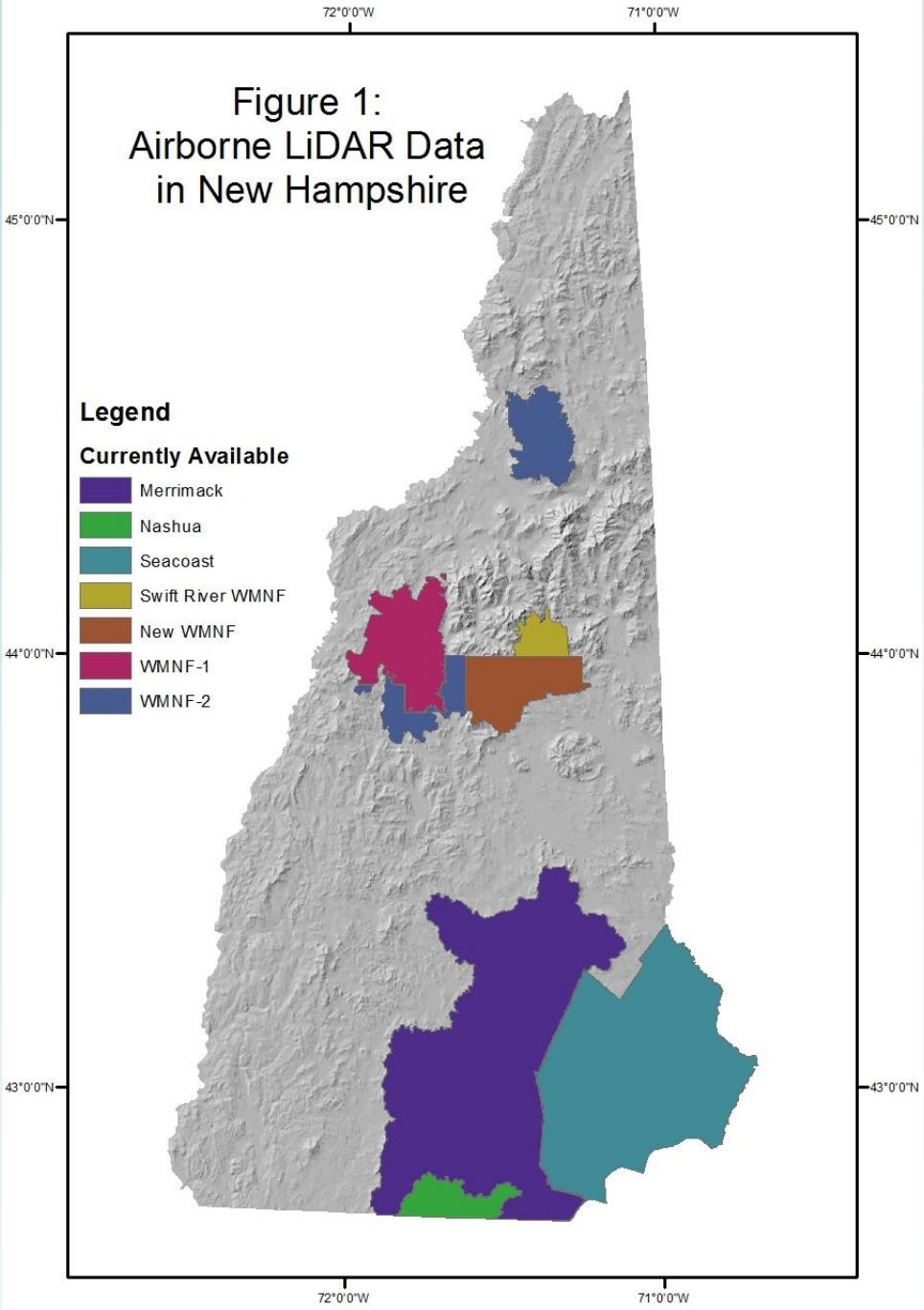
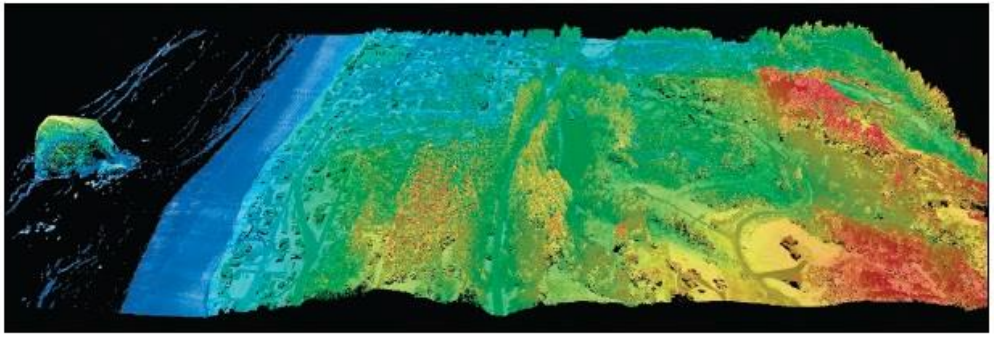
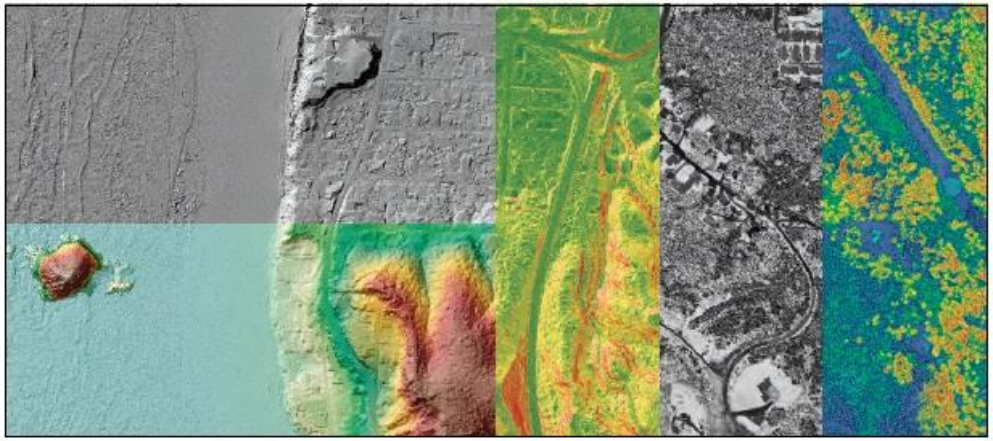


Figure 1:
Airborne LiDAR Data
in New Hampshire
72°0'0"W
71°0'0"W
45°0'0"N
44°0'0"N
43°0'0"N
Legend
Currently Available
Merrimack
Nashua
Seacoast
Swift River WMNF
New WMNF
WMNF-1
WMNF-2

USGS
science for a changing world

The 3D Elevation Program Initiative—A Call for Action





Circular 1399

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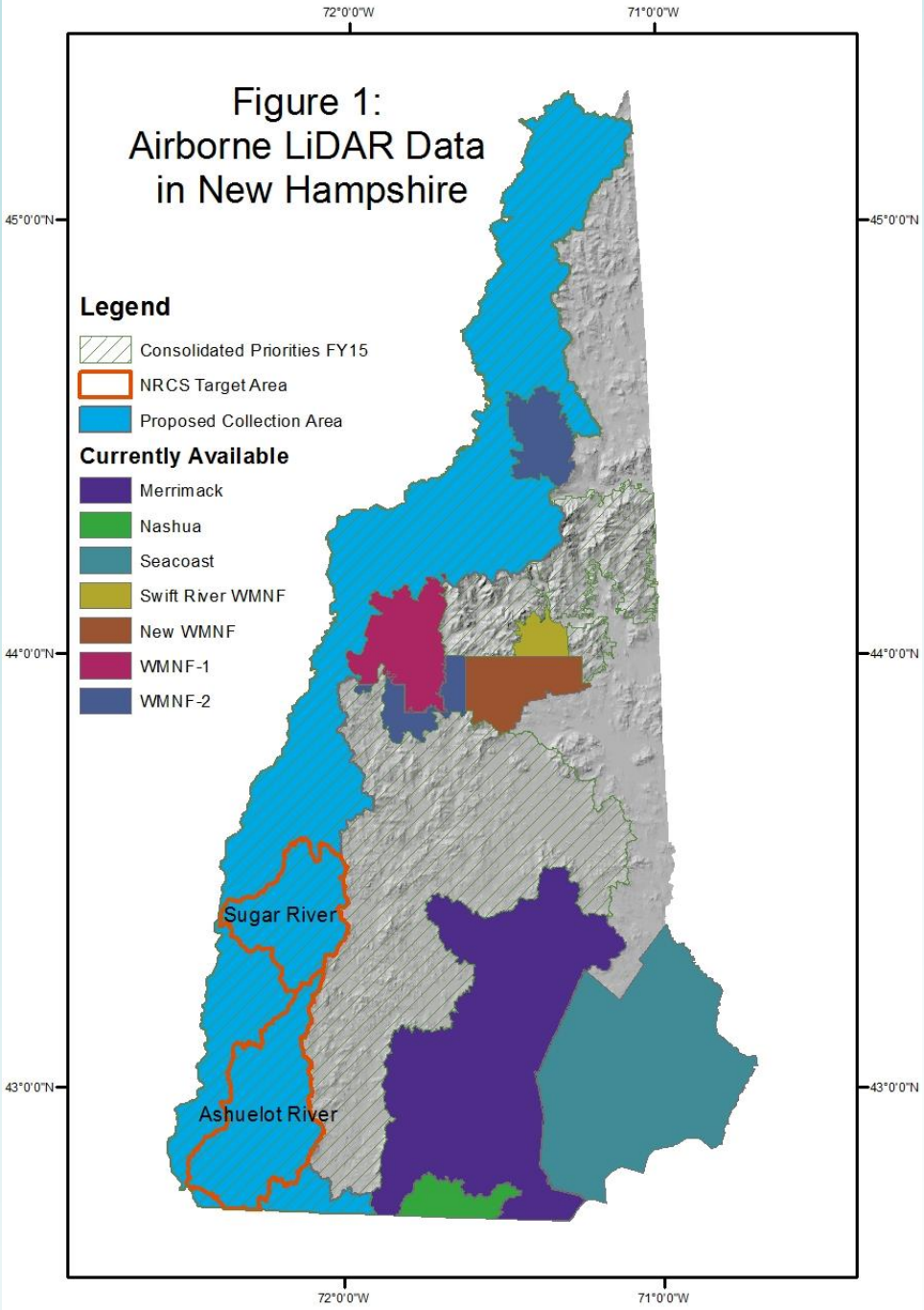
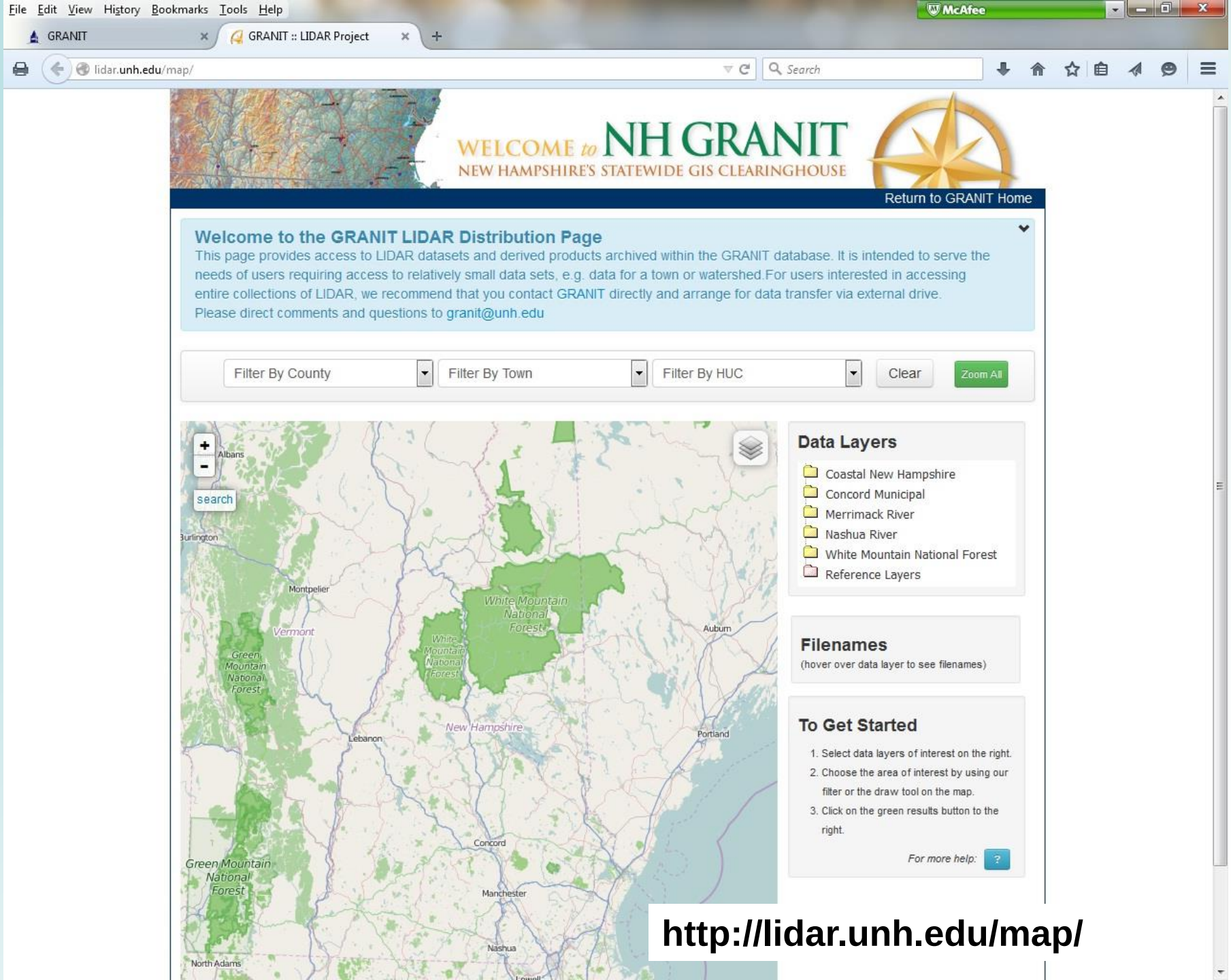


Figure 1:
Airborne LiDAR Data
in New Hampshire
72°0'0"W
71°0'0"W
45°0'0"N
44°0'0"N
43°0'0"N
Legend
Consolidated Priorities FY15
NRCS Target Area
Proposed Collection Area
Currently Available
Merrimack
Nashua
Seacoast
Swift River WMNF
New WMNF
WMNF-1
WMNF-2
Sugar River
Ashuelot River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NEW HAMPSHIRE'S STATEWIDE GIS CLEARINGHOUSE
Return to GRANIT Home
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This page provides access to LIDAR datasets and derived products archived within the GRANIT database. It is intended to serve the needs of users requiring access to relatively small data sets, e.g. data for a town or watershed.For users interested in accessing entire collections of LIDAR, we recommend that you contact GRANIT directly and arrange for data transfer via external drive.
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Filter By HUC
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Vermont
White Mountain National Forest
Green Mountain National Forest
Auburn
New Hampshire
Lebanon
Portland
Concord
Manchester
Nashua
North Adams
Data Layers
Coastal New Hampshire
Concord Municipal
Merrimack River
Nashua River
White Mountain National Forest
Reference Layers
Filenames
(hover over data layer to see filenames)
To Get Started
1. Select data layers of interest on the right.
2. Choose the area of interest by using our filter or the draw tool on the map.
3. Click on the green results button to the right.
For more help:
?
http://lidar.unh.edu/map/

Questions ?